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09/172,298	10/14/1998	HOWARD E. RHODES	M4065.101/P1	9094

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EXAMINER

MUNSON, GENE M

ART UNIT PAPER NUMBER

2811

DATE MAILED: 07/30/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

172,298

Applicant(s)

H. RHODES

Examiner

G. MUNSON

Group Art Unit

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— The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address —

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE THREE MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- ☒ Responsive to communication(s) filed on 13 June, 11 July 2003
- ☐ This action is **FINAL**.
- ☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- ☒ Claim(s) 1-4, 7-15, 18-23, 25-29, 31-39, 41-63, 65, 66, 115-144 is/are pending in the application.
- Of the above claim(s) _____ is/are withdrawn from consideration.
- ☐ Claim(s) _____ is/are allowed.
- ☒ Claim(s) 1-4, 7-15, 18-23, 25-29, 31-39, 41-63, 65, 66, 115-144 is/are rejected.
- ☐ Claim(s) _____ is/are objected to.
- ☐ Claim(s) _____ are subject to restriction or election requirement

Application Papers

- ☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.
- ☐ The drawing(s) filed on _____ is/are objected to by the Examiner
- ☐ The specification is objected to by the Examiner.
- ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119 (a)-(d)

- ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119 (a)-(d).
- ☐ All ☐ Some* ☐ None of the:
- ☐ Certified copies of the priority documents have been received.
- ☐ Certified copies of the priority documents have been received in Application No. _____.
- ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a))

*Certified copies not received: _____

Attachment(s)

- ☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____
- ☐ Interview Summary, PTO-413
- ☐ Notice of Reference(s) Cited, PTO-892
- ☐ Notice of Informal Patent Application, PTO-152
- ☐ Notice of Draftsperson's Patent Drawing Review, PTO-948
- ☐ Other _____

Office Action Summary

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Examination is continued under 37 CFR 1.114.

Claim 66 is rejected under 35 U.S.C. 112, first paragraph. The "processor" (claim 53) for particular use in a "camera" remains unclear from the specification (page 19) and Figure 11. See 37 CFR 1.71(b). The specification fails to distinguish the "processor" for particular use in a camera from the "processor" of claim 53, and so does not enable any person skilled in the art to make and use the invention of this dependant claim.

The process terminology (claims 31, 32, 38, 41, 42, 51, etc.) is considered only in terms of a necessary *resultant structure* from the process. The process itself is not at issue. The device claims are *not* limited to the recited process. See MPEP 2113; *In re Brown*, 173 USPQ 685 (CCPA 1972); *In re Fitzgerald*, 205 USPQ 594 (CCPA 1980); *In re Marosi*, 218 USPQ 289,292,293 (CCPA 1983); *In re Thorpe*, 227 USPQ 964 (Fed. Cir. 1985).

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the

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subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-4, 7-13 and 120 are rejected under 35 U.S.C. 102 as unpatentable as shown by Anagnostopoulos et al. See Figures 3A, 3B, 3C. The "nitrogen containing second insulating" layer reads on an ONO layer or NO layer as in Anagnostopoulos et al. See present claims 9-13, which encompass an ONO layer or NO layer as the "nitrogen containing second insulating" layer, where an oxide layer is "in contact with said substrate", since an ONO layer has three sublayers: silicon oxide on silicon nitride on silicon oxide. The "first" & "second" gate stacks read on electrodes 32 with "photogate" 30. For claim 2, as an alternative, in Figures 3B, 3C, the "first" & "second" gate stacks read on electrodes 30 with "photogate" 32. The "first" insulating layer reads on silicon oxide layer 36 (Figure 3A), on ONO layer or layer 43 (Figure 3B), and on NO layer or layer 52 (Figure 3C).

Claims 1-3, 7, 12, 14, 15, 18, 19, 25, 26, 28, 29, 31-33, 38, 39, 41-44, 46, 51, 53-55, 57-59, 66, 115-125 and 135-139 are rejected under 35 U.S.C. 103 as unpatentable over the acknowledged prior art in this application (Figures 1, 2, pages 1-12) and Nagasaki et al, considered together. For an imaging device as in the acknowledged prior art (Figures 1, 2), it would have been obvious to use a photogate insulator with higher dielectric constant, as suggested by Nagasaki et al (Figure 17; columns 2-3), in order to increase the capacity of the photogate. From Nagasaki et al (column 2 lines 22-24, column 3, table 1), both silicon nitride and silicon oxide were conventional materials for use as a photogate insulator, which would have been obvious to use as a photogate insulator. From Nagasaki et al, it would have been obvious that the materials used in this invention, e.g., conventional

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silicon nitride as in claim 12, would achieve a higher capacity of the photogate than use of conventional silicon oxide. Thus, it would have been obvious to use conventional silicon nitride, as in claim 12, in order to achieve a higher capacity of the photogate than the use of conventional silicon oxide. From Nagasaki et al, it also would have been obvious that the materials used in this invention would achieve a lower capacity of the photogate than would use of tantalum oxide, because tantalum oxide has a higher dielectric constant than silicon nitride. The conclusion is that the claimed invention as a whole would have been obvious at the time the invention was made to a person of ordinary skill in the art.

Claims 2, 4, 25, 27, 43, 45, 54, 56, 126-134 and 140-144 are rejected under 35 U.S.C. 103 as unpatentable, the evidence being the acknowledged prior art in this application (Figures 1, 2, pages 1-12) and Nagasaki et al, applied as in the above rejection, further considered together with Koike et al. The claimed materials (claims 2, 4, 25, 27, 43, 45, 54, 56) are conventional to use as a transparent or semi-transparent materials, as applicant would agree and as shown by Koike et al (column 3), which would have been obvious to use to achieve a transparent or semi-transparent photogate electrode. Note that "tin oxide" reads on SnO_2 . Moreover, it would have been obvious to have the photogate insulator extend over an adjacent "gate stack" (claims 126-134, 140-144) as the photogate insulator does over "gate stack" 18 of Koike et al (Figure 2), in order to achieve a photogate insulator and adjacent gate as in the acknowledged prior art in this application (Figure 1)

Claims 2, 8, 10, 11, 20, 22, 23, 25, 34, 36, 37, 43, 47, 49, 50, 54, 60, 62 and 63 are rejected under 35 U.S.C. 103 as unpatentable, the evidence being the acknowledged prior art in this

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application (Figures 1, 2, pages 1-12) and Nagasaki et al, applied as in the above rejection, further considered with Suzuki. The claimed materials (NO or ON), used by Suzuki (column 4), are well known to have a higher dielectric constant than silicon oxide, as applicant agrees (37 CFR 1.56, MPEP 2144.03), which would have been obvious to use for a photogate insulator in order to achieve a higher capacity for the photogate.

Claims 1-4, 7-15, 18-23, 25-29, 31-39, 41-63, 65, 66, 115-125 and 135-139 are rejected under 35 U.S.C. 103 as unpatentable, the evidence being the acknowledged prior art in this application (Figures 1, 2, pages 1-12) and Nagasaki et al, applied as in the above rejection, further considered together with Okada et al and Anagnostopoulos et al. The claimed material (ONO), used by Okada et al and Anagnostopoulos et al, is well known to have a higher dielectric constant than silicon oxide, as applicant agrees (37 CFR 1.56, MPEP 2144.03), which would have been obvious to use for a photogate insulator in order to achieve a higher capacity for the photogate. Moreover, it would have been obvious to use a silicon nitride layer for a photogate insulator, because silicon nitride has a higher index of refraction which improves light transmittance through the gate electrode, and because silicon nitride blocks indium from leaching out of an indium tin oxide photogate and into the substrate (Anagnostopoulos et al, columns 3-4). Furthermore, it would have been obvious to use a silicon nitride layer to enhance reliability in terms of dielectric strength for a photogate insulator (Okada et al, column 12, lines 29-31).

Claims 126-134 and 140-144 are rejected under 35 U.S.C. 103 as unpatentable, the evidence being acknowledged prior art in this application (Figures 1,2, pages 1-12), Nagasaki et al, Okada et

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al and Anagnostopoulos et al, as in the above rejection, further considered together with Koike et al, applied as in the above rejection of these claims.

The references are of record.

The arguments in the remarks which accompany the amendment, filed 13 June 2003 and now entered, have been considered but are not persuasive, as noted above. Contrary to the remarks (pages 20-22), the “nitrogen containing second insulating” layer reads on an ONO layer or NO layer as in Anagnostopoulos et al, since present claims 9-13 encompass an ONO layer or NO layer as the “nitrogen containing second insulating” layer, where an oxide layer is “in contact with said substrate.”

In Figure 3A, Anagnostopoulos et al do show a “first” insulating layer 36 “in contact with said substrate and beneath each of said first and second gate stacks” 32, *and* “nitrogen containing second insulating” ONO layer 35, 34, 36 “in contact with said substrate and beneath said photogate” 30. See present claims 9 and 13. The response does not point out any language in claim 1 which distinguishes over Anagnostopoulos et al, since claim 1 allows layer 36 to be “in contact with said substrate” as part of an ONO layer as in claims 9 and 13.

Contrary to the remarks (pages 23-33), from Nagasaki et al (column 2 lines 22-24, column 3, table 1), silicon nitride and silicon oxide were conventional materials for use as a photogate insulator. It would have been obvious to use conventional silicon nitride or conventional silicon oxide as a photogate insulator, and to use conventional silicon nitride as in claim 12, in order to achieve a higher capacity of the photogate than the use of conventional silicon oxide.

No claim is allowed.

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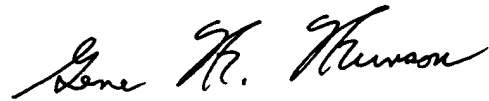
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Any inquiry concerning this communication should be directed to G. Munson at telephone number (703) 308-4925 or 0956.

Munson

7-28-03



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GROUP ART UNIT 2811**